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ABSTRACT

This report focuses on the fringe benefit element of total compensation for teachers in the Southeast. Study objectives include the following: (1) identifying teachers' fringe benefits in 12 Southeastern States; (2) examining the variation in fringe benefits within the region; (3) examining whether summer free time is a benefit or detriment; and (4) comparing teacher fringe benefits and total compensation in the Southeast with regional and nationwide industries. The report's first section describes the study time frame and data collection that was conducted in early spring 1985. The study highlights major fringe benefits available to teachers in the Southeast and analyzes the theoretical basis of the value of summer leisure. The final section estimates the values of summer leisure, other fringe benefits, and total compensation. Fringe benefits, as a percentage of salary, are compared to corresponding figures for other industries. Study results indicate: (1) educational attainment appears to raise salaries less rapidly than experience; (2) fringe benefits for beginning teachers average 32.2 percent of salary; (3) estimated "mean value" of summer leisure for teachers in the region is 13 percent of salary; and (4) teacher fringe benefits, excluding summer, are comparable to private industry as a percent of salary and exceed industry if leisure is included. Two reference pages and data reports are appended. (CJH)

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FRINGE BENEFITS AND THE VALUE OF SUMMER LEISURE FOR PUBLIC SCHOOL TEACHERS IN THE SOUTHEAST

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This research focuses primarily on the fringe benefit element of total compensation for teachers in the Southeast in order to develop an understanding of the teacher compensation picture. This understanding is necessary for school system administrators to meet their goals of (1) retaining quality teachers already in the system, (2) upgrading the skills of less-qualified teachers in the system, or available to it, and (3) increasing the pool of highly qualified new teachers. Increasing the quantity of highly qualified teachers supplied to the public school industry will require increased compensation in the form of higher salaries and/or fringe benefits.

The fringe benefit element of total compensation is a candidate for upgrading to attract teachers because our tax laws exclude benefits from taxable income, making them the better bargain for employees and employers relative to salary increases. Compared to a given salary gain, employees can receive the equivalent

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of more disposable income from the same dollar value of appropriate fringe benefits. From the employer's viewpoint, the equivalent amount of disposable income can be given through untaxed fringe benefits for a lower total cost. Further, fringe benefits are often more highly visible than salary increases, and appear more competitive or up-to-date when inevitable comparisons with private industry are made, where the value of fringe benefits amounts to about one-third of total payroll dollars in the United States [U.S. Chamber of Commerce, 1984, pp, 29-30].

Given the lack of good information regarding teacher fringe benefits, and the need to understand fully all parts of the teacher compensation package, including the value of summer leisure, the specific objectives of this research are to:

(1) identify the fringe benefits provided school teachers in twelve southeastern states;

(2) examine the extent to which fringe benefits vary by type and amount within the region;

(3) examine theoretically and empirically the question of whether free time in the summers is a benefit or detriment to teachers;

(4) place a value on teacher fringe benefits and summer leisure time; and

(5) compare teacher fringe benefit values and total compensation in the Southeast with other industries in the region and nationwide.

The order of the paper is as follows. The first section discusses the timeframe of the study and data collection. Next, the paper briefly highlights the major fringe benefits available to public school teachers in southeastern states. The theoretical basis for determining the value to teachers of summer leisure follows the fringe benefit discussion. The final section contains estimates of the value of summer leisure, other fringe benefits, and total

compensation for classroom teachers in the region. Fringe benefits, as a percentage of salary are also compared to the corresponding figures for other industries.[2]

TIMEFRAME AND DATA COLLECTION

Our research focuses on the twelve states comprising the original Southeastern Regional Council for Educational Improvement: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. In January of 1985 all education departments in these states were contacted to obtain basic information regarding statewide retirement systems, salary schedules, and leave provisions. This initial survey information was received during the months of February and March. In late March and early April, appropriate personnel in each of the twelve state departments of education were asked to identify local districts that would represent a stratified sample of districts along a low-to-high continuum of total compensation and, particularly, fringe benefits. A questionnaire was sent to 46 of these local districts requesting information on salaries, salary supplements, and various local and state fringe benefits for the 1984-85 school year. Some 42 local districts responded with completed questionnaires, procedural manuals, personnel handbooks, and benefit pamphlets. These were received throughout April, May, June, and July in 1985. Thus, the information derived from our own surveys of state and local school officials, as well as from published sources, provides the basic data for the fringe benefit portion of this report.

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[2]Those who wish to examine any of the data or issues discussed in this paper should review the Research Report from which this paper is drawn [Mabry, et. al., 1985, pp. 1-189.].

The data for the empirical estimation of the value of summer leisure to teachers came from the Bureau of the Census' Current Population Survey tapes for 1977 and is discussed in greater detail in that section and Appendix A.

HIGHLIGHTS OF FRINGE BENEFITS AVAILABLE TO CLASSROOM TEACHERS

From published data and our survey results, we identified the following major types of fringe benefits available to teachers in the Southeast:

1) social security,
2) retirement,
3) medical and hospitalization insurance,
4) life insurance
5) leave benefits,
    - sick
    - personal
    - vacation
    - maternity
    - sabbatical
6) unemployment compensation insurance,
7) worker's compensation insurance,
8) other fringe benefits, and
9) summer leisure.

Each benefit category is discussed briefly below, only to give a flavor of the variety of benefits available in each state. The descriptive results of our investigation of teacher fringe benefits are summarized in Table 1.

Social Security

All but three states require public school teachers to participate in the federal social security program, with either the state or local district paying the employer contribution. Louisiana and Kentucky teachers are not covered by social security, and a significant minority of local districts in Georgia (about one-third) choose not to participate in the program.

TABLE 1

SUMMARY OF SELECTED TEACHER FRINGE BENEFITS BY STATE, 1984-85

Benefits	AL	AR	FL	GA	KY	LA	MS	NC	SC	TN	VA	WV
1. Social Security												
a) Available?	yes	yes	yes	*	no	no	yes	yes	yes	yes	yes	yes
b) Employee share paid by state?	no	no	no	no	--	--	no	no	no	no	no	no
2. Retirement												
a) Mandatory state retirement plan?	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
b) Employer contribution?	9.75%	13.86%	12.24%	13.23%	12.85%	9.3%	8.75%	11.05%	7.3%	15.03%	11.15%	***
c) Teacher contrib.?	5.0%	8.0%	0	8.5%	9.6%	7.0%	8.0%	7.0%	**	5.0%	5.0%	6.0%
d) Years to vest?	10	10	10	10	5	10	10	5	5	10	5	20
e) Annual benefit with 30 years service and $25,000 average salary base?	$15,938	11,925	15,000	15,000	18,750	19,050	12,500	11,775	11,799	13,122	11,781	15,000
f) Annual benefit is __ percent of average salary base?	64%	48%	60%	60%	75%	76%	50%	47%	47%	53%	47%	60%

*A significant minority of Georgia districts have opted out of social security.

**Teacher contribution is 4% of first $4,800 and 6% of remainder of salary.

***West Virginia contributes $1,482.82 per teacher or about 7.4% of a $20,000 salary.

TABLE 1 (continued)

Benefits	AL	AR	FL	GA	KY	LA	MS	NC	SC	TN	VA	WV
3. Health and Hospitalization Insurance												
a) Basic, individual health plan available at state level?	yes	yes	*	yes	yes	***	no	yes	yes	****	no	yes
b) Annual cost to employer [state or local] per teacher for basic plan [dollar amount or percent of salary]?	$420	$420	*	3.0%	$646	***	--	$577	$738	****	--	$302
c) Dental care included at no cost [or partial cost] to teacher?	no	no	*	no	no	***	--	no	yes	****	--	no
d) Vision and/or hearing care included at no cost [or partial cost] to teacher?	no	no	*	no	no	***	--	no	no	***	--	no
4. Life Insurance												
a) Basic life insurance plan through private carrier available from state at no cost to teacher?	no	yes	*	no	yes	***	no	no	yes	****	no	yes
b) Face amount?	--	$5,000	*	--	$3,000	***	--	--	$3,000	****	--	$10,000
c) Is there an additional one-year-of-salary [or some other multiple] death benefit paid by state?	yes	no	no	no	**	yes	no	yes	yes	****	yes 2xSalary	no
d) Annual cost to state or local district per teacher [dollar amount or percent of salary]?	?	--	--	--	.00905%	?	--	?	.003%	****	?	--

*Florida is a locally-oriented system with good overall state financial support (about 65% of total local costs). Most specific benefits are left to local districts.

**The Kentucky Retirement System provides $2,000 of paid up life insurance and monthly benefits to survivors of active members who die.

***Health and life insurance are locally provided in Louisiana, but the state provides lump-sum funding to districts of about 4.0% of salaries.

****Tennessee is locally oriented with respect to benefits. State formula funds enables local districts to provide health and life insurance. In addition, the retirement system does have several in-service death benefits that are to many thousands of dollars of life insurance.

?Unable to estimate accurately due to lack of data.

TABLE 1 (continued)

Benefits	AL	AR	FL	GA	KY	LA	MS	NC	SC	TN	VA	WV
5. Leave Benefits												
a) Number of sick leave days allowed BY STATE, assuming nine-month contract?	9	9	9	11	10	10	7	9	12	9	9	13
b) Sick leave days accumulation limit?	150	45	no limit	45	no limit	no limit	30	no limit	90	no limit	**	no limit
c) Number of personal leave days NOT charged to sick leave?	2	0	0	0	3	0	2	2 must pay substitute	0	2	**	0
d) Is an extended sick leave period available (a) without pay or (b) with cost of substitute only deducted?	no	no	no	no	no	yes(a)	yes(b)	yes(b)	no	no	**	no
e) Number of maternity leave days NOT charged to sick leave?	0	0	0	0	0	0	0	*	0	0	**	0
f) Is paternity leave allowed?	no	no	no	no	no	no	no	*	no	no	**	no
g) Is there a true paid (partially or wholly) sabbatical leave program available?	no	no	no	no	no	yes	no	no	no	no	**	no
h) Is there a true paid vacation leave program available to nine or ten-month contract teachers?	no	no	no	no	no	no	no	yes 10-21 days	no	no	**	no

*Any teacher, male or female, in North Carolina may take up to one full year of leave without pay for the birth or adoption of a child.

**Virginia sets a maximum sick leave standard of at least one day per month, but allows local districts to set all othe leave policies, as well as add to the sick leave minimum.

Retirement

All twelve states in the region have mandatory state retirement plans. The state plans which provide most benefits are those in Louisiana and Kentucky, which is to be expected, since teachers in these states are ineligible for social security. Maximum annual retirement benefits after thirty years of service in Louisiana and Kentucky are about 75 percent of salary, compared with a range of from 47 percent to 64 percent in the other ten states. Florida's retirement system is unique among the state systems in that it is the only state of the twelve that pays all system costs, not requiring any contributions from its teachers.

Medical and Hospitalization Insurance

In five of the twelve southeastern states, medical and hospitalization insurance is left to local districts with varying degrees of direct or indirect funding flowing from state governments. These states are Florida, Louisiana, Mississippi, Tennessee, and Virginia. The other seven states provide state-wide health plans with annual costs to the states varying from $302 to about $780 per teacher.

It is in this fringe benefit area--health insurance--that the first deviation from the range of benefits available to employees of private firms is found. Large private firms began offering extra dental and other specialized plans earlier than state-wide school systems, which are certainly not small industries. Of the more state-oriented systems in terms of health plans, only South Carolina has a state-subsidized dental plan, for example, and this only became available in February of 1985. No state has any vision or auditory insurance plans

available, no did any local districts that we surveyed. A few districts did offer subsidized dental plans.

Life Insurance

The area of life insurance appears to be one of the neglected fringe benefits for teachers. Very little life insurance is provided by states or local districts to teachers. When it is available as a benefit, the amounts are often quite small, ranging from $3,000 to $10,000. On the other hand, several states do offer a one-year-of-salary (or some other multiple) benefit at death, sometimes as a part of the retirement system's benefits. In some cases it is a tricky business to determine whether this is a paid benefit or not. In Georgia, for example, five-tenths of one percentage point is added to the teacher's contribution to the retirement system to pay for their life insurance benefit, taking it out of the state-paid fringe benefit category. Virginia's shared-cost life insurance plan provides the best coverage in the group. The primary benefits are (1) life insurance at two times salary, (2) double that amount for accidental death, and (3) dismemberment insurance, costing the teacher $7.20 per thousand dollars of insurance.

Leave Benefits

All states set minimum sick leave policies ranging from nine to thirteen and one-half days per contract year. Several districts surveyed add one to three days to that minimum. Accumulation of sick leave is allowed in all states, ranging from 45 days to an unlimited amount. Only five states allow teachers to take personal leave without charging it against sick leave. These states are

Alabama, Kentucky, Mississippi, North Carolina, and Tennessee. Several of the other states let local districts set their own personal leave policies.

Extended sick leave is not generally available as a specified benefit, though most local districts probably allow teachers to return to their jobs in the system, creating a defacto extended-leave-without-pay policy. Louisiana, Mississippi, and North Carolina do have specific extended leave policies.

In all states, except North Carolina, maternity leave is first charged against sick leave. North Carolina allows any teacher, male or female, to take up to one full year of leave without pay for the birth or adoption of a child. No paternity leave is recognized in any of the other states.

Only Louisiana offers a true, employer-paid sabbatical leave policy for its teachers. It is very generous in terms of pay and the criteria used to qualify for such leave.

Only North Carolina offers true vacation leave for its teachers, in addition to holidays and personal leave. The length ranges from ten to twenty-one days, depending on years of service. This is a tremendous benefit in North Carolina and, coupled with generous maternity and extended sick leave policies, makes this state the clear leader in leave benefits.

VALUING SUMMER LEISURE OF TEACHERS

Before we can estimate the momentary value of the full fringe benefit package for teachers, consideration must be given to summer leisure implicit in standard teacher contracts, which vary roughly in length from nine to ten months in the Southeast. In this section, we answer the question of whether summer leisure is a benefit to teachers or an unhappy circumstance of educational employment.

The traditional school schedule may exist to allow continuing education for teachers, plant maintenance, students to take advantage of non-school opportunities such as work, camps, and the like, remediation, or perhaps it is the result of precedent set when our economy was primarily agrarian and students were needed on the farm from planting time until harvest. Whatever the reason, the short school year means that those employed to teach students cannot be productively employed in this activity for a significant part of the year. How to treat teacher's free time in the summer is a question that is both controversial and of considerable importance for policy. On the one hand, it is argued that this work schedule gives teachers a distinct advantage. Many have school-age children themselves, and this work schedule permits them to be home when their children are not being supervised in school. This argument is circular, of course, because if schools were operated year round (and students attended throughout the year), supervision of children in the summer would be done by the schools, and teacher-parents would not be handicapped by their work schedules. Nevertheless, there may be a group of people who wish to supply less than the standard forty-eight to fifty weeks of work per year. If this is true, then this work schedule with its two or three month break may be regarded as an advantage for some teachers.

On the other hand, teacher groups have argued that this "abnormal" work schedule imposes a hardship on teachers, that most teachers prefer to work longer than they are employed to teach each year. Indeed, one survey of Alabama teachers [Cotter and Hardee, 1984] reported that 55 percent of primary and secondary teachers contacted in that state have worked in second jobs at some point in their careers to supplement their incomes. Fifty-one percent of this group had done so during the previous year. If, in fact, most teachers are

constrained to work less than they would otherwise, we must regard this work schedule as a disadvantage to some teachers rather than a benefit.

Our theoretical result, which we confirm empirically, is that this restricted work year constrains teacher labor supply, forcing them to accept a less-than-optimum amount of work. With any degree of competition in the teacher labor market, however, this constraint requires some compensation premium to be paid to teachers. Therefore, the costs of instruction per unit, where this is true, could be lowered by lengthening the school year to accommodate the wishes of teachers to obtain higher total incomes by working longer each year.

It is important to note that summer leisure time available to teachers does have value, and that this leisure is also part of the total compensation package for teachers. The debate over whether summer leisure is a benefit to teachers or a burden to bear is really a product of imprecise language. Teachers who say they want to work in the summers are not really seeking more work; they want the opportunity to earn higher total incomes. These teachers do not mean to say that having their summers free is of no value, for if that were the case they would be indifferent between staying at home and working the extra months without any increase in salary--an unlikely statement of their position. If summer leisure is a burden (has negative value), as some say, teachers would be willing to pay to work in the summer; that is, they would accept a lower salary to be able to work in the summer--an even less likely position. Summer leisure has positive value to teachers, since it is likely they must be paid a higher total salary to accept the longer, full-year schedule.

What teachers who support a longer work year mean to say is that they value a proportionately higher income from working longer more than they value the leisure time they now receive. Other teachers, who say they like the benefit of

having their summers off, simply value that leisure more than the proportionate extra salary they would expect to receive if they had to work two or three more months. Therefore, summer leisure does have value, to both groups, but some teachers would derive greater benefit from the extra income received from teaching through the summer, if such work were available.

Thus, the question to investigate is whether, on average, teachers get more satisfaction from summer leisure or from extra income from working longer, given that option. If teachers prefer the extra income to their current summer leisure, on balance, they must be disappointed by their constrained work schedules. Therefore, teachers will require a wage rate premium for the time they do work, or else they will choose other occupations over the long run.

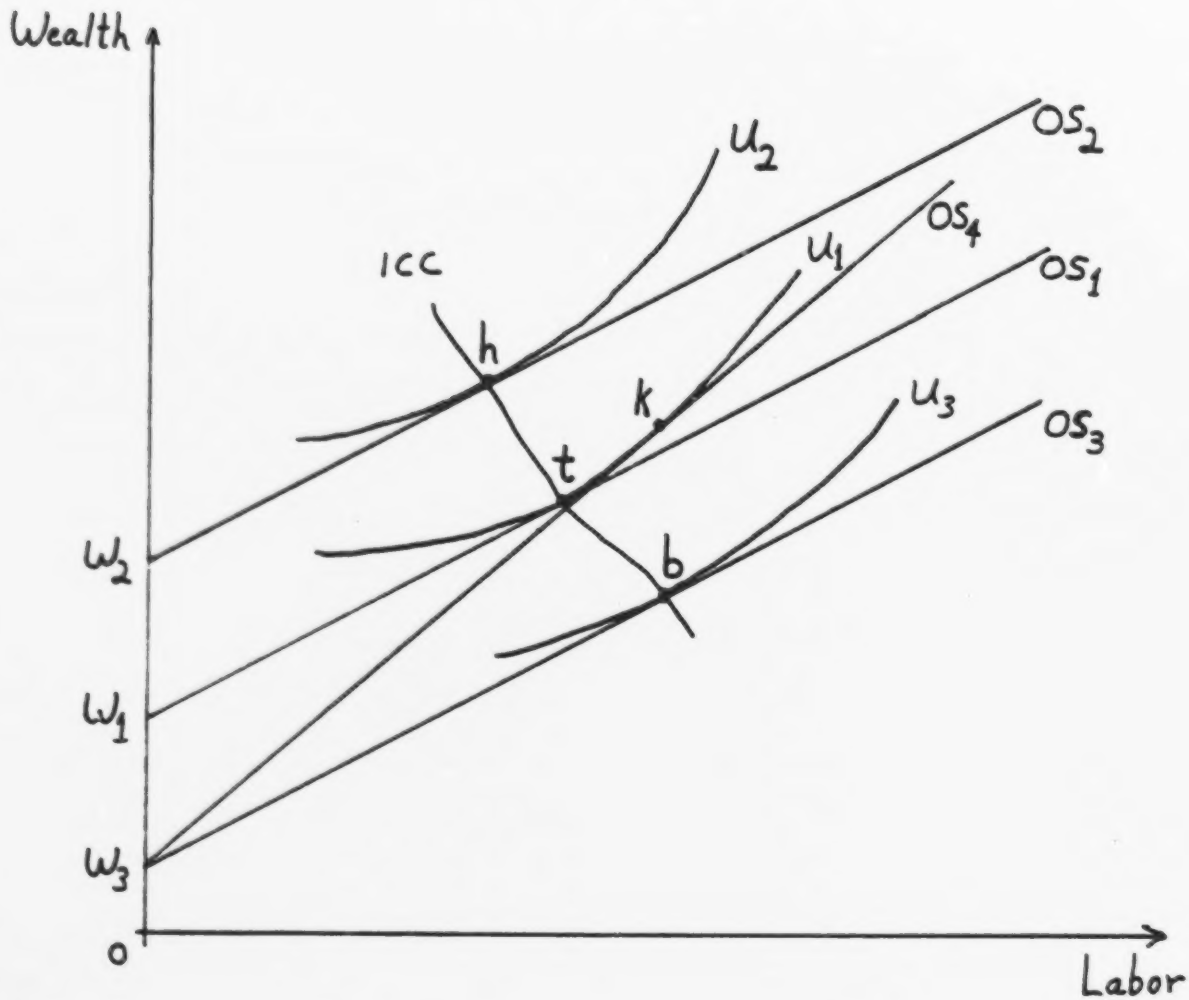
Theory of Constrained Labor Supply and Wage Rates

A well-developed model of occupational choice [Lindsay, 1971] exists in which both wages and weeks worked are endogenous. That is, workers supply themselves to occupations on the basis of wage rates, and then choose the amount of work to supply in the occupation. Initially, we assume that workers are free to set their own schedules and hours. This assumption is relaxed later when we replace it with the actual restricted work schedule faced by most teachers.

Wages vary in this model because of the different educational and training requirements for alternative occupations, and this wage rate variation produces variation in the hours chosen in each occupation. Since we also begin with the simplifying assumption that workers are identical, all who choose the same occupation choose the same schedule.

Figure 1 illustrates the wealth-labor trade-off in utility space. Wealth-labor combinations are ordered by a utility function for which the marginal rate

FIGURE 1



of substitution of leisure for wealth is negative. This simply means that leisure time and wealth are substitutes, or that the typical person is willing to give up some amount of wealth to get more leisure, or to forego some amount of leisure in return for an increase in wealth (income). Realistically, there are several margins of adjustment for such a choice between leisure time and wealth, but here we focus only on hours worked versus wealth.[3]

It is easily shown that the amount of labor supplied is influenced by both the wage rate and the amount of nonwage income (initial wealth, savings, and income of other family members) available to the worker. In Figure 1, for a base level worker with no training and nonwage wealth of W_1, the opportunity set of wealth and labor supplied is given by OS_1. The slope of this opportunity set is, of course, the wage rate. The worker will choose combination t along this opportunity set. Combination t represents the highest level of satisfaction the base worker can attain, given the set of opportunities available to him or her. A worker facing the same wage rate, but with more nonwage wealth, W_2, will choose combination h along parallel opportunity set OS_2 providing less labor and more leisure, if leisure is a normal or desirable good.

Investment in training and education requires the expenditure of household resources directly in the form of tuition and other out-of-pocket expenses, and indirectly in the form of foregone earnings. A higher wage rate is required to compensate for these costs. For example, a reduction in nonwage wealth from W_1 to W_3 with no wage increase would provide combination b, at best, which is inferior to any combination of wealth and leisure on OS_1. Only if wages rise in

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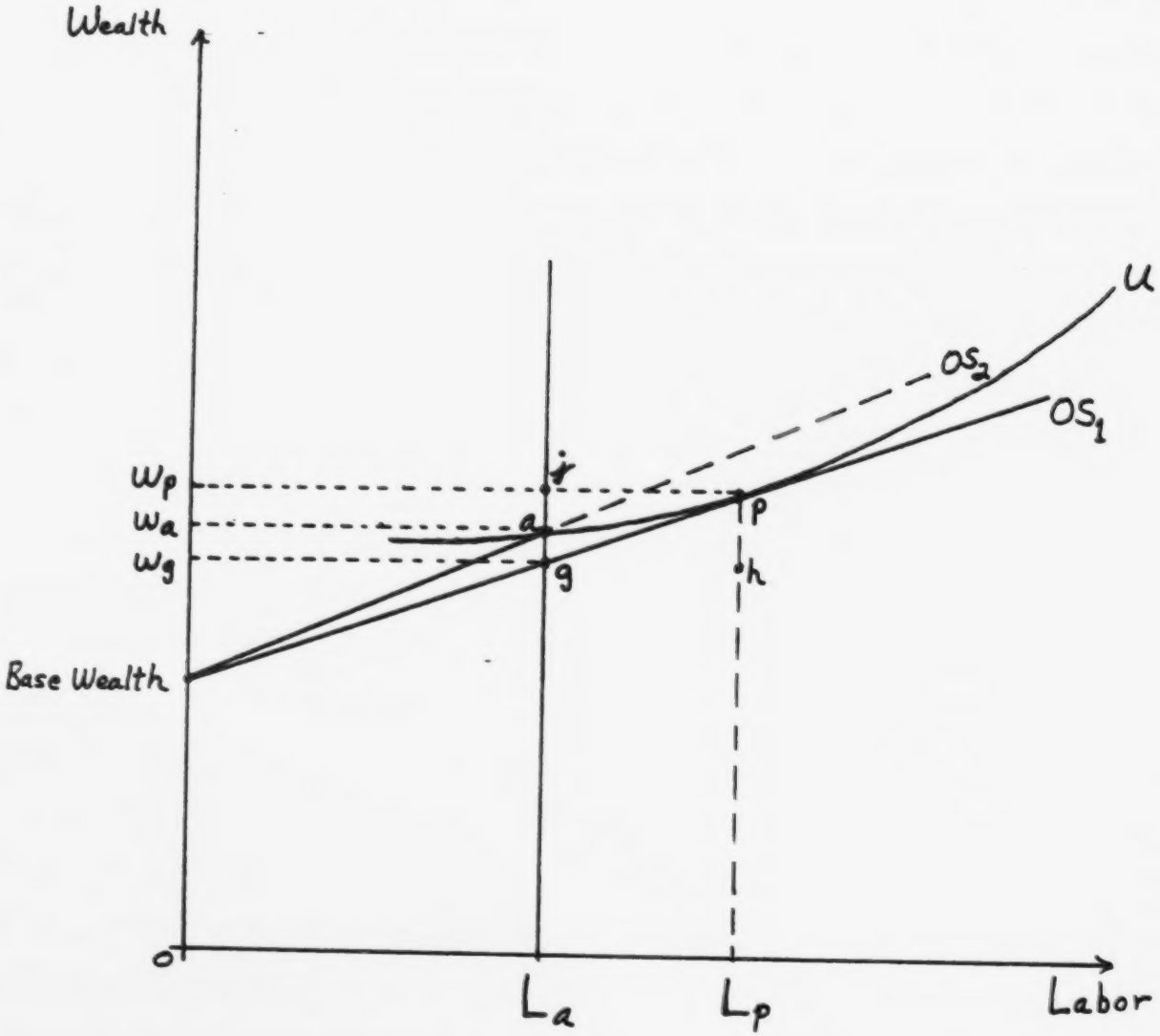
[3]We also assume for the purposes of exposition that the interest rate is zero, so that earnings over the lifetime may be aggregated without the complication of discounting. The qualitative results of the model are unaffected by this assumption, and empirical work reported below is estimated in semi-log form to incorporate standard human capital discounting considerations.

this more highly trained occupation to the level indicated by the slope of OS_4 does a combination such as k become available which is equally as attractive as combination t, obtained without the training. Note, however, that workers who invest in this training will supply more labor in addition to earning higher wages. The theory has two implications: labor supply is negatively related to nonwage income and positively related to the amount of education and other human capital possessed, which command a higher wage rate in the market.

School teachers, who are generally restricted to short work years, cannot attain the optimum combination of labor and earnings associated with the wage rates they receive. Under such circumstances, it is possible that school boards must pay a wage rate premium in order to attract qualified workers into this occupation. This premium is over and above the amount that workers with identical training and qualifications receive in other occupations where they are not constrained to work less than they desire.

Since teachers with constrained work schedules have discontinuous opportunity sets, they are forced to a "corner solution" as indicated in Figure 2, and must be compensated for this inconvenience. Opportunity set OS_1 in Figure 2 represents the unconstrained combinations available to workers with a given amount of human capital and nonwage wealth. (The opportunity set for workers without this level of training has been deleted in the interest of clarity.) Combination p is preferred at this wage rate, and is associated with the supply of L_p hours of labor. Assume, however, that teachers are constrained to work no more than the actual amount, L_a. At the wage rate paid to other unconstrained workers and represented in OS_1, teachers would obtain only the inferior combination g, resulting in wealth level W_g instead of W_p. Competition among employers in all industries, however, will not permit teachers to be exploited in

FIGURE 2



this way over the long run. As long as other employment is available offering combination p, no worker will choose to become a teacher. In order to make this occupation attractive to potential teachers, the wage rate must rise until a combination is available that is the equivalent of combination p. That can only occur if the wage rate rises to the slope of OS_2 permitting workers who supply no more than L_a hours of labor to obtain combination a, the actual combination that occurs in the market that yields wealth level W_a. Thus, a testable implication of this theory is that teacher wage rates are predicted to be higher than wage rates for workers in other occupations requiring the same amount of human capital, ceteris paribus.

Note, however, that OS_2 is discontinuous; it does not extend beyond combination a. Even though they desire to, workers may not choose combinations along the dotted portion of this curve. Since indifference curve U is convex (meaning leisure and wealth are substitute goods), we may conclude that the reservation wage of teachers for additional marginal employment is less than that for unconstrained workers supplying L_a hours of labor. Such workers can be induced to supplement their professional earnings at wage rates below those earned by other workers with equivalent qualifications in other occupations. We may therefore derive a second major implication from this model: A higher proportion of school teachers will have second jobs at lower wage rates than other workers with equivalent training.

These two hypotheses will be tested momentarily, but before proceeding we wish to make the analysis very clear by stating it another way. Our typical teacher in Figure 2 is not allowed to choose combination p representing twelve months of work and a total wage that when added to a base amount of wealth from other sources yields a total wealth level of W_p. This, however, is the teacher's

preferred combination. The teacher's preferences are contained in curve U, which shows all the combinations of work (labor amounts) and resulting wealth levels that are equivalent to each other. Since L_a is the amount of work (nine months) that is actually allowed, the teacher would be at g, and less well off than at p. How much compensation is required, i.e., what wage premium is required, to make the teacher just as happy as he or she would be at combination p? The amount gj (or W_pW_g) would be more than enough because the teacher would be earning the same total salary and winding up with the same total wealth, W_p, but having to work much less. On the other hand, giving the teacher nothing for having to work less than his or her preferred amount and receiving only W_g final wealth, i.e., moving to combination g, would be less than enough. The way the utility curve is drawn in Figure 2, this typical teacher must be compensated ga amount (or W_a-W_g amount) to put him or her at combination a, which is equivalent in every way to the teacher's preferred position p.

Note three things about combination a: (1) it contains more total wage than is in combination g by ga amount (the teacher is being compensated partly through a higher wage rate to accept less work) and it contains more leisure than is in combination p (the other part of the compensation for accepting less work); (2) the full wage loss from being denied position p (full work) and moving to g (nine months work at the old wage rate) is not made up with the wage premium, and the difference between ga (the extra earnings from the wage premium) and gj (the total wage loss from the restricted schedule) is the monetary value of the extra leisure obtained; and (3) this point a is the actual combination that occurs in the market, i.e., over the long run, compensation schedules have changed so that

teachers now in labor market equilibrium are receiving a premium for accepting less than their preferred amount of work.[4]

Note further, that if the utility indifference curve were not convex, but a straight line coinciding with OS_1, then combination g would be equivalent to the chosen combination p. This would mean the lost salary (represented by a lower salary in g) was exactly offset by the extra leisure (also in g). In other words, the value of the extra leisure from working only nine months would be exactly equal to the income given up, and no wage rate premium for having work a shorter period would be necessary nor exist in the market. On the other hand, if the utility curve were kinked or otherwise a straight line from p over through j, then summer leisure would have zero value to teachers and, in a competitive market, they would have to be paid a total salary premium equal to one-quarter of the twelve months salary or, what is the same thing, one-third of the nine months salary. Among other things, it is the existence of this premium we wish to test in the remainder of this section, and, if it exists, we wish to estimate its magnitude.

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[4] The two testable hypotheses discussed above--the existence of a wage rate premium for teachers due to constrained work schedules and a disproportionately high number of moonlighting teachers--are implied only if school teachers are similar to the population of non-teachers. It is quite possible that teachers as a group contain a disproportionate number of workers who prefer to supply less labor, by virtue of self-selection over time. That selection might be based on personal preferences for the amount of work to offer per year, or on such factors as the existence nonwage wealth. One group of workers who would be predicted to prefer less work at a given wage rate is the one comprised of workers with working spouses.

While possible, this argument is not completely convincing. It leaves unanswered the crucial question of why such workers would choose teaching as the occupation in which to congregate instead of other (seasonal) jobs. That is, unless there are other good reasons to operate schools for less than the full term, there is no reason for those wishing to supply lower than normal levels of labor to congregate in disproportionate numbers in this occupation. It does suggest, however, that those with working spouses as well as those with other nonwage wealth will accept lower wages to teach.

Teacher Wage Rate Premiums for Restricted Work Schedules

Our procedure used to test for the existence of a wage rate premium paid to teachers for their constrained work schedules consists of two steps. First, census data on all full-time workers is used to predict the number of hours and weeks teachers would choose to work, based on worker and labor market characteristics. That is, labor supply equations are estimated, the parameters of which can be employed to predict the number of hours and weeks chosen by workers with any particular set of characteristics. The difference between the amount of time actually worked and the predicted amounts measures the extent to which teachers are constrained.

The second step is to estimate the relationship between wage rates and the difference between teachers' desired and actual work time. Our theory predicts that wage rates are positively related to the absolute value of these differences. That is, the more severe the constraint teachers' work schedules, the greater will be the wage rate premium.

The Labor Supply Equation. It is quite plausible that the constraint on labor supply operates with the effect described on two margins. Both hours per week and weeks per year may be affected. We have therefore estimated the effect on both with the following form of the labor supply equation:

$$WORK = b_0 + b_1 EDUCATION + b_2 EDUCATION^2 + b_3 AGE + b_4 AGE^2 + b_5 WIFE*KIDS + b_6 NONWAGE\ INCOME + b_7 SEX + b_8 URBAN + b_9 SMSA\ RANK*URBAN.$$

We assembled a test group of primary and secondary public school teachers from the March and May 1977 Census of Population Survey (CPS) tapes.[5] We then regressed the effective wage rates of these educators on variables predicted to influence their rates of pay, including our measure of work schedule constraint (the difference between desired and actual hours and weeks worked). The results are largely supportive of our theory. Teachers as a group work significantly fewer weeks per year than they would choose to worked and are paid more per hour as a result.

Specific definitions of the variables and their modes of construction are provided in the discussion of the data in Appendix A. Here our discussion is limited to the rationale for the inclusion of each variable as well as its hypothesized sign.

WORK. In the hours equation, this variable is the number of hours worked reported in the week prior to the survey. Some confusion is apparent in responses to the question concerning weeks worked the previous year in the survey. A large number of respondents interpreted this question to concern the number of weeks employed, for approximately 60 percent answered this question with 52 weeks. For this reason, it was necessary to construct a measure of weeks worked from other data reported. This is described in Appendix A.

AGE, AGE2. It seems quite plausible that labor supply might vary over the life cycle, holding other factors constant. During the early years of a worker's career, many will have young children at home who require more time for care and nurturing. During later years, on the other hand, workers look forward to retirement and may enter this state gradually by slowly reducing the labor they supply to the market. These

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[5]The 1977 census data was selected because of completeness and the fact that labor economists generally feel there were fewer labor market distortions that year compared to the recession years and a sluggish economy between 1979 and 1982.

thoughts suggest the possibility of a labor supply function that rises over time in the early years of the career, reaches a peak, and then declines. For this reason, we have included both AGE and the square of this variable, AGE2 in these estimates.

EDUCATION, EDUCATION2. The theory suggests that labor supply is positively related to educational attainment. Investment in education raises productivity in work relative to leisure activities leading those with more education to substitute income from work for household production and leisure activities. A squared term is also included to capture the possible higher order effects of education.

SEX. This variable is included to capture the effect of any possible differential labor supply behavior due to the sex of the worker.

WIFE*KIDS. This variable allows the marriage status variable to interact with the number of children under eighteen present in the household. Children represent an additional household responsibility that typically falls most heavily on the wife. This variable is included to measure the impact of this responsibility on labor supply.

URBAN. This variable is included to capture the effect that the work environment may have on the quantity supplied. To the extent that workers in urban environments will typically face longer commutes, we predict that some portion of this commuting time will be deducted from both work and leisure. We therefore predict that workweeks supplied by urban workers will be shorter.

SMSA RANK*URBAN. This variable allows the size of the SMSA to interact with the urban dummy variable. SMSAs are ranked by size from 1 to 61. As these ranks may be considered to proxy the lengths of the commutes, an extension of the argument for the URBAN variable suggests that labor supply will be related to rank with SMSAs.

OLS regression estimates of the labor supply equations are presented in Table 2. The t-statistics are in parentheses. Although the R-Squares for these equations are quite low, the high F-statistics indicate the equations taken as a whole explain statistically significant amounts of the variation in the labor supplied. The weeks equation is troubled by the misreporting in the dependent variable discussed above. We are encouraged, nevertheless, by the similarity of these results and those in the hours equation. The predicted effects are confirmed for both weeks and hours worked in each equation.

TABLE 2

LABOR SUPPLY, U.S. WORKERS REPORTING FULL TIME WORK

R-Square	.08	.10
F-Statistic	112.8	357.3
Observations	9,181	9,181
Variable	**Weeks per Year**	**Hours per Week**
Variable	Coefficient (t-Statistic)	Coefficient (t-Statistic)
CONSTANT	15.1100 (9.01)	42.7011 (39.39)
EDUCATION	.9698 (5.27)	-.4205 (-3.54)
EDUCATION2	.02518 (3.60)	.02517 (5.57)
AGE	1.0413 (17.65)	.1343 (3.51)
AGE2	-.01072 (-14.85)	-.001595 (-3.41)
SEX	-1.6014 (-6.30)	3.1813 (-19.29)
WIFE*KIDS18	-1.3572 (-7.78)	-.2530 (-2.23)
WAGE INCOME	-9.103 E-06 (-6.23)	-2.760 E-05 (-2.91)
NONWAGE INCOME	-.0001397 (-3.32)	5.153 E-6 (0.19)
URBAN	.03704 (0.12)	-1.4363 (-7.43)
SMSA RANK*URBAN	-.006373 (-0.51)	.02344 (2.75)

The effect of education is to increase labor supplied in both equations, as predicted by our theory. The relationship identified is quadratic in both cases. The effect of education on weeks and hours worked in our sample full-time workers is positive and increasing with level of education throughout the range of this variable. Both AGE and its square are significant, and the estimated shape conforms to our earlier hypothesis. Labor supply in each equation rises at a decreasing rate to a peak (at 48 years in the weeks equation and at 42 years in the hours equation) beyond which it falls. Being female and having children in the home both reduce labor supply in both equations. Women workers supply about 1.6 fewer weeks per year than statistically matched males and about 3.2 fewer hours per week. Being a wife with children under eighteen subtracts an additional 1.4 weeks per child and a quarter of an hour per child from the typical work schedule.

The theory also predicts that other household income reduces labor supply, and this implication is also supported by these results. The effect of wage income of other household members is slight, reducing labor supply by .009 weeks and .027 hours per $1,000, but significant in both equations. Nonwage income reduces weeks supplied substantially (.14 weeks per $1,000), but seems to have no effect on hours.

Finally, the labor market environment seems to have played a role as well. Although our dummy variable URBAN as well as the interaction of this dummy with SMSA RANK has no effect on weeks worked, both significantly affect hours per week. Earlier we suggested that commuting time would be subtracted from both leisure and hours worked per week, and this result is strongly supported in the data. Workers in an SMSA supply about 1.4 fewer hours per week. The interaction of SMSA RANK*URBAN is also significant in the hours equation. We suggested that

size is related to commuting time, hence larger size implies less labor supplied. As size is inversely related to rank, the positive coefficient may be interpreted as indicating that higher rank (and a longer commute) is associated with fewer hours supplied.

The Wage Rate Premium. A subsample of all public primary and secondary teachers was then created from the original sample, and the residuals--differences between actual and predicted work length--from both the hours and the weeks equations were recovered. Since these residual differences are negative, our hypothesis is that the residuals will be negatively related to teacher wage rates, or that the shorter the work schedule, the higher the wage rate. Wage rate paid must increase at an increasing rate as the magnitude of these differences between actual and desired labor supply increases.

We denote the (negative) residuals from the weeks equation as RWEEKS, which indicates how much less teachers actually work than predicted if they were unconstrained like their counterparts with identical characteristics in other industries. The corresponding residual for the hours equation is denoted as RHOURS.

To test our hypothesis, we regress the natural logarithm of the wage rate on these residuals and other variables predicted to influence the wage rate. The equation estimated here and reported in Table 3 is:

$$\begin{aligned} \text{LNWAGE} = {} & B_0 + B_1\ \text{RHOURS} + B_2\ \text{RHOURS}^2 + B_3\ \text{RWEEKS} + B_4\ \text{RWEEKS}^2 + B_5\ \text{EDUCATION} \\ & + B_6\ \text{EDUCATION}^2 + B_7\ \text{EXPERIENCE} + B_8\ \text{EXPERIENCE}^2 + B_9\ \text{RACE} + B_{10}\ \text{SEX} \\ & + B_{11}\ \text{URBAN} + B_{12}\ \text{SMSA RANK*URBAN} + \text{STATE DUMMY VARIABLES}. \end{aligned}$$

Although many of these variables also appear in the labor supply equation, the justification for their inclusion here is in some cases quite different and merits separate discussion.

SEX. It is often alleged that wages paid to women are less than those paid to men because of discrimination. there are other nondiscriminatory reasons why women might be expected to earn lower wages than men, but this debate is beyond the scope of this research. See several discussions of theories of nondiscriminatory wage differentials by microeconomists [Gwartney and Stroup, 1973; Mincer and Polachek, 1974; and Landes, 1977]. Nevertheless, the facts are that regressions of the wage rate on sex typically find this an important and highly significant determinant of variation in wages. This dummy has a value of one if female and zero if male.

RACE. This variable has a value of one if the worker is a member of a minority race. Otherwise, it takes a value of zero. This is included to identify effects such as those mentioned in connection with SEX that may operate through the race of the worker.

EDUCATION, EDUCATION2. According to the theory presented above, education is predicted to affect the wage rate as labor supply. The square of the number of years of education completed is included, as in the labor supply equation, to identify higher order effects.

EXPERIENCE, EXPERIENCE2. As pointed out in the Data Discussion immediately following this section, this variable measures only years not devoted to education, at best a measure of years potentially in the labor force. It fails to differentiate between experience in the current job and experience in some unrelated occupation or even adult years out of the labor force. This variable is nevertheless included as a proxy of the worker's investment in on-the-job training [Mincer, 1974]. Studies of the effect on the life-cycle wage rate of investment in training that depreciates over time yield results that are consistent with an upwardly convex curve over the life cycle [Porath, 1967]. For this reason, the square of years of experience is also included.

URBAN, SMSA RANK*URBAN. URBAN is a dummy variable which takes a value of one if the household lives in an SMSA and zero otherwise. Wages are typically higher in cities, reflecting the higher costs of living there. For the same reason, wages are higher in larger cities than smaller ones. We therefore include the interaction of the URBAN dummy with SMSA RANK. Recall that this rank is an inverse ordering with size, so a negative coefficient is predicted for this variable.

TABLE 3

WAGES OF U.S. PUBLIC SCHOOL TEACHERS:
EFFECTS OF WORK SCHEDULES

R-Square	.66
F-Statistic	13.63
Observations	484

Variable	Coefficient	t-Statistic
CONSTANT	8.4520	5.18
RHOURS	-.006511	-5.70
RWEEKS	-.02147	-9.35
RWEEKS2	.000328	2.31
EDUCATION	-.7891	-4.12
EDUCATION2	.02351	4.39
EXPERIENCE	.02004	6.11
EXPERIENCE2	-.000318	-3.60
RACE	-.000584	-0.02
SEX	-.005352	-0.24
URBAN	.2172	5.96
SMSA RANK*URBAN	-.006530	-4.79
STATE DUMMY VARIABLES	-----	-----

STATE Separate dummy variables are included for each state. These are included to reflect differences in the cost of living and other location specific effects that affect wage rates. Although we do not report the coefficients on these dummies in Table 3, they enter highly significantly as a group ($F = 3.58$), and, individually, several are quite significant (27 have t-ratios greater than 2.00 in absolute value).

Our regression results indicate both education and experience (as squared values as well as unadjusted amounts) are significant determinants of teacher wage rates. The coefficients of education on the log of wages is widely interpreted to be the rate of return earned on education. In our sample of teachers, this rate of return is positive and rising at the mean value of education (17.7 years). The estimated rate of return at this mean is 4.3 percent.

Similarly, experience conforms to our hypothesis of an upwardly convex curve over the working career of teachers. Teachers' wage rates reach a maximum at 31.5 years of experience. Surprisingly, in view of the frequency with which race and sex are found to have significant wage effects in micro data sets such as these, these two variables have very small and insignificant coefficients in this equation.

Most important, however, our hypothesis that school teachers, who are constrained by the abnormally low work schedules they must follow relative to workers in other industries, must be compensated with higher wage rates to induce them to supply labor to this market is confirmed by the results in Table 3. In the cases of both RWEEKS and RHOURS, the coefficients are negative and highly significant. The greater the absolute difference between actual and desired work hours or weeks, the higher the wage rate. Alternatively, school teachers reveal themselves to be willing to accept a lower wage rate in order to work more. Thus, we can conclude that the summer layoff imposed on teachers is a penalty

rather than a benefit, and that school district authorities are incurring higher unit labor costs as a result of their policy.

In particular, based on the estimated coefficients for teachers and the population at large, teachers now receive a 9.9 percent wage rate premium compared to other similar workers without such severely restricted work schedules. The implication is that teachers would be willing to accept up to a 9.9 percent reduction in their hourly wage rate in order to be allowed to work 5 to 10 extra weeks per year.[6] Of course, this nearly ten percent wage premium is for the average or typical teacher. Some teachers may not value summer leisure as highly as the average teacher, and may not be satisfied with this premium. They may want the opportunity to earn more income by working longer (or a higher wage rate premium to accept their current work schedules). Still other teachers may value leisure relative to extra income more highly than average. For these teachers, this existing wage rate premium is more than sufficient to induce them to accept nine-month positions.

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[6]Even though our estimates support the argument that school teachers are constrained in their choice of the term of employment, they also suggest that our estimating procedure is biased. The bias shows up in the fact that the estimated function relating the wage to residual weeks worked does not reach a minimum where residual weeks are zero. Similarly, the estimated relationship between RHOURS and the wage rate is everywhere downward sloping. The theory says that at zero residual work the wage effect should turn from downward to upward sloping. This is an implication of the convex indifference curve shown in Figure 2. One interpretation of our empirical result is that, instead of predicting workers' hours at p, our estimating procedure predicts desired work somewhere to the left of its true value. In that sense, the wage contour we plot continues to fall beyond our estimate of zero residual work. The causes of this bias are potentially several; measurement error attributable to the survey nature of the data, a truncated distribution of the dependent variable in the labor supply equations due to the limit on the amount of time one can work, as well as omitted and mismeasured variables such as experience discussed above. All or any of these effects are likely to bias our estimates of desired work in the direction of understating residual work. An alternative interpretation is that school teachers are not alone in facing a constraint on the amount of work they are allowed to supply.

An additional implication of these results is that teachers will lose this wage rate premium (over time) if they move to twelve-month schedules. Although their salaries would increase for the longer work period, competitive pressures would ultimately lead to the same (lower) wage rates earned by those in other industries with same characteristics. In other words, moving from nine-month to twelve-month work schedules would not mean that teachers' salaries would increase by one-third. Salaries might increase by roughly one-third of current salary less the 9.9 percent premium over the long run, if teachers were allowed to work a full year.

Our results further indicate further that summer leisure has significant value since monthly wage rates for teachers have not risen a full one-third so that when applied to nine-month teacher salaries a "worthless" three month vacation is fully offset. From this theory and the estimated premium for the average teacher, a method for calculating the value of leisure for teachers can be devised. The value of the summer leisure for a typical teacher for whom leisure is a normal good is the difference between the current total salary premium and the extra income the teacher would receive if he or she worked a full year. Remember, the theory indicated in Figure 2 says that teachers receive both the wage premium and the value of summer leisure as payment to be included in their total compensation, which must be equivalent to total compensation in other industries in competitive markets. This value for summer leisure must be a pro rata extension of the teacher's current salary (without the premium) less the current premium.

Let,

S = salaries of identical people in other industries working twelve months,

T = teachers' salaries for nine months,

P = teachers' salary premium (contained in T) for constrained schedule, and

V = value of summer leisure for teachers.

Then, in labor market equilibrium, teachers and other workers with identical skills and training and tastes in other occupations must earn the same total compensation. Thus,

$$T + V = S.$$

However, since other workers earn the same as teachers, but without the premium and without summer leisure, and for twelve months or 1/3 more time,

$$S = 1.33(T - P).$$

Therefore,

$$T + V = 1.33(T - P),$$

or

$$T + V = T - P + .33(T - P)$$

$$V = - P + .33(T - P)$$

$$= .33(T - P) - P \quad .$$

Thus, the value of summer leisure to teachers is the summer portion (one-third) of a "pro rata" extension of their nine-month salaries without the wage rate premium minus the premium.

This valuation method for summer leisure assumes teachers have the alternative of earning the full twelve-month wage in another occupation. While this is an accurate assumption in the in the long run, we recognize its obvious problems and the fact that it ignores the costs of changing jobs that current teachers would face. However, teachers do have the opportunity to work at other jobs in the summer, at least at the minimum wage. Consequently, we choose to value summer leisure as a fringe benefit in the estimates in the remaining parts

of this paper as an average of what teachers could earn in the summer working at the minimum wage and the amount of income they would earn in the summer in alternative occupations, estimated as one-third of their nine-month non-premium salary, minus the premium. This method assumes teachers' opportunity cost of summer leisure is somewhere between the income they forego from not working at the minimum wage and not changing occupations altogether.

These calculations were made for each teacher category, by experience and educational level, in each of the states in the region. For a teacher on a regular nine-month schedule (180-day contract), the minimum opportunity cost of summer leisure is $1,608 in foregone minimum wage earnings (60 days x 8 hours x $3.35/hour = $1,608). The maximum opportunity cost of summers for a teacher on a regular nine-month contract, evaluated as summer income lost from alternative employment, is 20.13 percent of the teacher's current nine-month salary.[7] Appropriate adjustments were made for teaching contracts of different lengths.

The major results of our investigation of the value of summer leisure can be summarized as follows:

1. summer leisure has positive value for the typical teacher;
2. teachers receive a 9.9 percent premium in their current salaries as compensation for a restricted work schedule;

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[7] Val summer leisure$_9$ = .3333[curr sal - .099(curr sal)] - .099(curr sal)
= .2013(current nine-month salary)

3. teachers on average are willing to work more weeks at a lower wage rate (by about 9.9 percent) in order to increase their total annual compensation;

4. teachers on average are willing to work more hours per week at a lower hourly wage rate (5 more hours at about 3.25 percent less per hour) in order to increase their total annual compensation;

5. the value of summer leisure can be calculated as the average of the minimum and maximum opportunity costs of accepting summer leisure, where the minimum is earning the minimum wage for the summer and the maximum is earning the wages paid in other occupations requiring similar skills and training (equal to a proportionate extension of teachers' non-premium salaries, less the premium, for the summer); and

6. based on (3) and (4) above, school administrators could open schools year round and lower daily per pupil education costs significantly, assuming mostly fixed physical plant costs, while raising total annual teacher compensation.

The research reported in this section raises a number of important and yet unresolved issues. The topic of work scheduling and its implications for labor supply and the cost and productivity of our educational resources has been the subject of almost no formal analysis to date. The present study has only broken the surface of this subject, yet it has unearthed some intriguing results. It suggests that substantial savings in labor cost can be achieved by expanding the work schedules of teachers. Clearly, these results need to be replicated with other data and analyzed from additional vantage points. If substantiated, however, serious attention must be given to altering the traditional school calendar.

VALUES OF CLASSROOM TEACHER FRINGE BENEFITS, TYPICAL SALARY, TOTAL COMPENSATION, AND COMPARISON TO OTHER INDUSTRIES

District and state salary schedules allowed us to determine the 1984-85 salaries of teachers by education/experience category for each state. The typical salary beginning teachers receive in the local districts surveyed ranges

from a low of $11,975 in Mississippi to $16,057 in North Carolina, averaging $14,899 for the southeastern region. At the other end of the education/experience spectrum (we calculated and reported data for ten separate categories in the basic research report), teachers with a doctoral degree and twenty years of experience receive a low of $21,909 in Mississippi (83 percent more than the beginning teacher) and a high of $31,060 in Georgia (96 percent more than the beginning teacher in that state). For the southeastern region, this most experienced teacher category averaged $25,646 or 72 percent more than the average for beginning teachers.

Fringe benefits, in general, are valued at cost per teacher paid by the state or local district, for the 1984-85 school year. Sometimes this is a flat amount, sometimes it is a percent of salary, such as social security contributions. Leave days are valued at the teacher's daily salary, less the cost of a substitute when the teacher has to pay for the substitute. Exact explanations of fringe benefit cost calculations are explained in the underlying research report [Mabry, et. al., Research Report, 1985, pp. 131-137]. Summer leisure values are calculated according to the method previously noted.

Fringe benefits for beginning teachers, excluding the value of summer leisure, range from $2,974 to $7,209 and average $4,794 for the region. As a percent of typical salary, these benefits range from 24.8 percent to 44.9 percent and average 32.2 percent for the twelve states examined. The figures for teachers with doctoral degrees and twenty years of experience are higher in dollar terms, but are much the same as a percent of salary. The range is from $5,040 to $14,192 with an average of $7,899. As a percent of typical salary, the corresponding range is from 23.0 percent to 51.4 percent, averaging 30.8 percent.

Summer leisure has an average value of $2,103 for beginning teachers in the region and $3,066 for the top category of teachers. When this benefit is added to other "normal" benefit values, the benefit package for teachers is especially attractive. Total benefits for beginning teachers as a percent of typical salary then range from 40.8 percent in Kentucky to 60.0 percent in North Carolina, with a regional average of 46.3 percent.

Table 4 presents the summary values for typical salary, fringe benefits, and total compensation for the mean of all teacher education/experience categories in the twelve southeastern states in the region.

TABLE 4

Mean Values for Total Compensation, Fringe Benefits and Typical Salaries across All Educational and Experience Levels by State and for the Southeastern Region, 1984-85

Elements of Teacher Compensation	SOUTHEASTERN REGION		
	Mean All Ed/Exp Levels (1)	Percent of Total Compensation (2)	Percent of Typical Salary (3)
Total Compensation Including Summer	$30,250	100%	144%
Total Fringe Benefits Including Summer	9,221	30	44
Mean Value of Summer Leisure	2,653	9	13
State Paid Fringe Benefits	5,521	18	26
Locally Paid Fringe Benefits	1,047	3	5
Typical Salary	21,029	70	100
State Contribution to Salary	17,367	58	83
Local Contribution to Salary	3,662	12	17

The average typical salary in the southeastern states for 1984-85 is $21,029.[8] The average value of non-summer fringe benefits is $6,568 which is 31 percent of salary. The mean value of summer leisure is another $2,653 or 13 percent of total salary. Thus, total fringe benefits on average in the region are valued at $9,221, or 44% of explicit salary.

Teacher Fringe Benefits Compared to Other Industries

The most recent hard data available on fringe benefits offered in other industries is that contained in the latest report of an annual benefits survey conducted by the U.S. Chamber of Commerce entitled Employee Benefits 1983, published in late 1984. As reported in that survey [U.S. Chamber of Commerce, 1984, p. 30], about $550 billion was spent on fringe benefits in all industries in the U.S. for 1983. Benefits, which are equal to more than one-third (37 percent in 1983) of payroll dollars, are growing faster than either wages or inflation. For the period 1973 to 1983, benefits rose 189 percent while wages rose 140 percent and prices 124 percent. Over that period, the annual compound rate of growth in fringe benefits was a phenomenal 11.7 percent.

Table 5 presents the dollar value of fringe benefits per employee for the nation by industry group for 1983 in column (1). Column (2) shows these benefits as a percent of payroll or salary, and column (3) reports these percentages for firms located in the southeastern region. At the bottom of the table, our figures for teachers in the Southeast for 1984-85 are shown for comparison.

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[8]These are averages of "typical salaries" because our sample of local districts is limited. These figures do not represent total salaries paid divided by number of teachers. Rather, they are averages of the ten categories of education/experience levels for the sample of districts in each state, which are then averaged for the region.

TABLE 5
Fringe Benefits by Industry Type for 1983 and for Teachers in the Southeastern Region for 1984-85

Industry Group	Annual Fringe Benefits Per Employee Nationally 1983 (1)	Fringe Benefits as Percent of Payroll or Salary, 1983 (2)	Southeastern Region's Fringe Benefit as Percent of Payroll or Salary, 1983 (3)
Mean for All Industries	$ 7,582	36.6%	33.9%
Mean for Manufacturing	8,110	38.7	33.4
Mean for Non-Manufacturing	7,163	34.9	34.3
Mean for Southeastern Teachers Without Summer, 1984-85	6,568	31.2	31.2
Mean for Southeastern Teachers With Summer, 1984-85	9,221	43.8	43.8

Interpreting and comparing the results leads to mixed conclusions. The value of fringe benefits given teachers in the Southeast, excluding the value of summer leisure, is $6,568 which compares unfavorably with the national average of $7,582 for all industries. This is especially so, considering the fact that the industry data is for 1983 while our data is for the 1984-85 academic year. We estimated that this lag of at least one year in the industry data would increase the figure for 1984 to about $8,264, assuming a conservative growth rate of 9 percent. On the other hand, the dollar figures are biased in favor of teachers because the industry data is for a full year. Taking three-quarters of the adjusted industry guide for 1984, we would have a crudely comparable total fringe

benefit amount for all industries nationally on a nine-month basis of about $6,198, which is less than what teachers receive in the Southeast, even with the value of summer leisure excluded.

If we compare the full year figure for teaching, i.e., including the mean value of summer leisure, of $9,221 with the full year figure for all industries adjusted to 1984, $8,264, we find that teachers are typically still ahead of the average for all industries with respect to the value of their fringe benefits.

On a percentage basis, fringe benefits nationally in all industries amounted to 36.6 percent of payroll in 1983, while benefits for teachers in the Southeast more than a year later amount to 31.2 percent of salary when the value of summer leisure is excluded. However, this figure for teachers in the Southeast rises to 43.8 percent when the estimated mean value of summers is added, an amount that compares more than favorably with other industries.

When compared to firms located in the Southeast where fringe benefits are slightly less, or about 33.9 percent of payroll, either comparable figures for teachers (31.2 percent without summer as a benefit and 43.8 percent with summer leisure included) seems respectable at worst and quite advantageous at best.

These averages conceal important information within the region regarding teacher benefits. Fringe benefits for teachers in particular states vary significantly and some care should be taken when generalizing across all states in the region. It is still true, however, that in no state, when our "mean value" of summer leisure is included, does the fringe-benefits-to-salary percentage for teachers fall short of the same figure for either all industries nationally, or the southeastern region.

The major results of our investigation of salaries and the value of fringe benefits available to teachers can be summarized as follows:

1. typical salaries in 1984-85 for beginning teachers in the Southeast average $14,899;

2. typical salaries in 1984-85 for highly educated and experienced teachers average $25,646, which is little incentive for new entrants to make teaching in the public schools a career;

3. educational attainment appears to raise teachers' salaries less rapidly than experience;

4. fringe benefits for beginning teachers average $4,794, or 32.2 percent of salary, excluding any value for summer leisure. The corresponding figures for teachers with doctoral degrees and twenty years of experience are $7,899 and 30.8 percent;

5. the estimated "mean value" of summer leisure for all teachers in the region is $2,653, or 13 percent of salary on average. Total fringe benefits in the region, including the value of summer leisure, average $9,221 or 44 percent of salary; and

6. teacher fringe benefits, excluding summer, are comparable to private industry as a percent of salary. Including conservative estimate of the value of summer leisure, however, means that teachers' fringe benefits as a percent of salary exceed those available in private industry.

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APPENDIX A: DATA FOR THE VALUE OF SUMMER LEISURE ESTIMATIONS

In order to test the theory, we required data on workers from both the 1977 March and May Census of Population Survey (CPS) tapes. This year was chosen from the set 1971-1981 because it is arguably the least affected by aggregate economic performance. CPS tapes report the following variables that were of interest to us:

From the March 1977 Survey

WEEKS -- weeks worked over the last year

WAGES -- annual wages and earnings

FYTOT -- total family income

FYOUT -- family income from non-wage sources

NONWAGE INCOME -- family income minus individual earnings, wages, and earnings.

From the May 1977 Survey

SALARY -- average weekly salary

Included on Both 1977 Surveys

HOURS -- average hours worked each week

AGE -- age

SEX -- men = 0, women = 1

RACE -- whites = 0, black and others = 1

EDUCATION -- years of education completed

EXPERIENCE -- AGE minus EDUC minus 6

WIFE -- marital status reported as wife in family

SMSA RANK -- population rank of standard metropolitan statistical area

URBAN -- location of individual in a ranked SMSA = 1, non ranked or rural
= 0

STATE -- state of residence.

From the 160,799 observations, we chose those respondents who were presently employed. Because this set contained many casual workers, we further limited our sample to those who reported working more than 35 hours the previous week, who were employed more than 35 hours per week the previous year, and who reported working more than 30 weeks the previous year. This provided a sample of 39,036 observations. However, a number of anomalies were discovered in the data that required further restrictions on the sample.

Most important for the study at hand, we found that over half of all people (teachers included) reported that their weeks of work were 52. When we contacted the Department of Labor, we found out that the interviewers do not prompt the respondents to clarify whether this means weeks of employment or actual weeks worked. Hence, the sample includes both types of answers. This is particularly troubling because, for salaried people, the hourly wage must be computed. For this reason we used the May CPS data source in connection with March. The May survey reports average weekly earnings from which an hourly wage can be computed without regard to the weeks available. Moreover, the weeks variable can be computed more accurately using the two data sources. Thus, we adopted the following convention:

1) WEEKS = WAGES/SALARY

2) If WEEKS > 52, then hourly wage (HRWAGE) = WAGES/(HOURS . 52)

3) If WEEKS > 52, then WEEKS = 52

As there is no respondent identifier on these tapes, it was necessary to match individuals from tape to tape using a household identifier and reported demographic information. The variables used for this purpose included race, sex, veteran status, education, age, relationship to head of household, marital status, and occupation. This draws a coarser net than might be used, but, with degrees of freedom in surplus, it assures that we only include truly tracked individuals. By cross checking several categories, we did allow for birthdays, marriages, divorces, and deaths between the surveys. Excluding all nonmatches leaves a sample of over 9000 fulltime workers, including nearly five hundred public elementary and high school teachers.